A41.

MODEL FQR

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33⅓ r.p.m.) and a 5 Valve Superheterodyne Five Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre, 31 Metre and 49 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

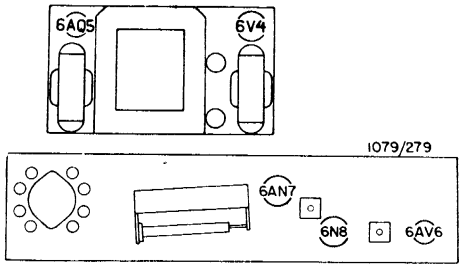
Radio Operation:- 55 Watts-approx.
Gramo Operation:- 75 Watts-approx.

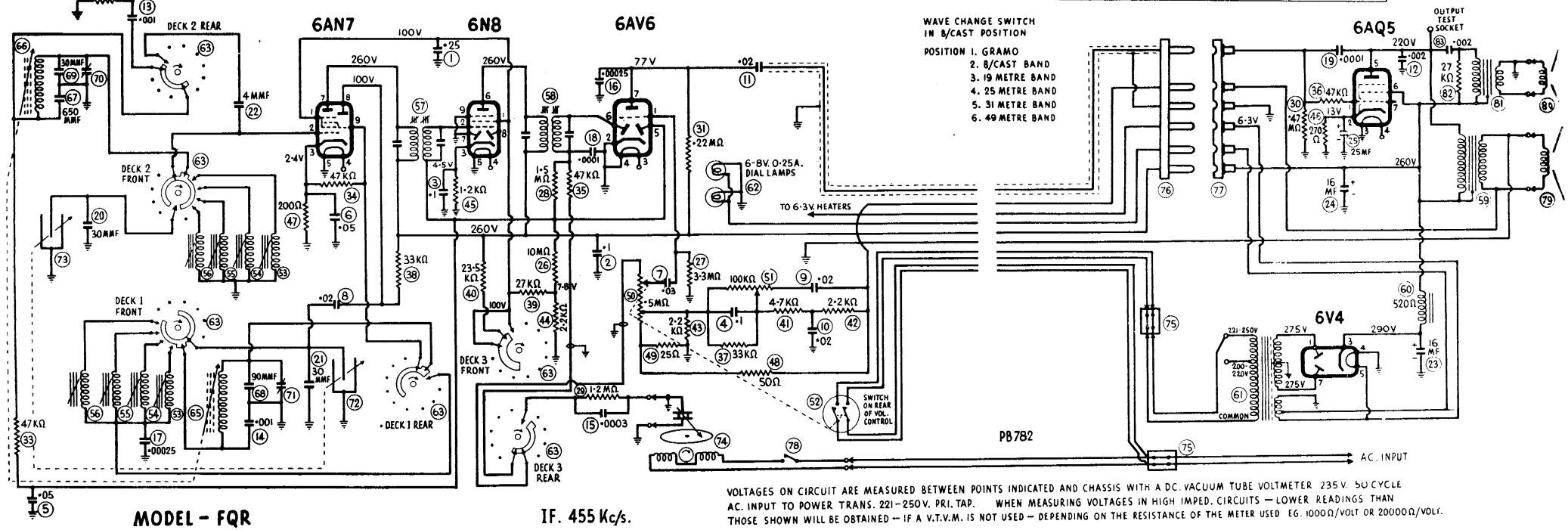
TUNING RANGES:—

Broadcast Band,	535-1610	Kc/s.	
19 Metre Band,	14.9-15.5	Mc/s.	(Bandspread)
25 Metre Band,	11.6-12.1	Mc/s.	(Bandspread)
31 Metre Band,	9.4-9.8	Mc/s.	(Bandspread)
49 Metre Band,	5.95-6.25	Mc/s.	(Bandspread)

RECEIVER COVERAGE:—

560.7-186.3	Metres.
20.13-19.29	Metres (approx.)
25.86-24.79	Metres (approx.)
31.91-30.61	Metres (approx.)
50.42-48.0	Metres (approx.)





VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A D.C. VACUUM TUBE VOLTMETER 235 V. 50 CYCLE AC. INPUT TO POWER TRANS. 221-250 V. PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A V.T.V.M. IS NOT USED — DEPENDING ON THE RESISTANCE OF THE METER USED EG. 1000Ω/VOLT OR 20000Ω/VOLT.

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator:	
Output Meter:	
Mica Capacitor:	0.01MF. (for IF. trans. alignment)
Dummy Antenna:	200MMF. Mica Capacitor.
Dummy Antenna:	400 Ohm non-inductive resistor.
Alignment Tools:	Type M195 and PM581.

ALIGNMENT CONDITIONS

Load Impedance:	5,000 ohms.
Output Level:	50 Milliwatts.
Vol. Control:	Max. Vol. fully clockwise.
Intermed. Freq.:	455 Kc/s.
Input Voltage:	230 Volts 50 Cycle AC. input to trans. 221-250 volt pri. tap.
Tone Control:	Treble position.

I.F. TRANS. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Remove receiver power supply chassis and tuning unit chassis from cabinet as detailed on page 9.			
2.	Remove dial back plate from tuning unit chassis:– A. Loosen off grub screws in tone control gear wheel hub, then pull gear wheel straight upward off the control spindle. B. Unscrew large nut fastening small metal gear plate to bush on tone control. C. From volume control shaft remove small gear plate with gears attached by pulling it straight upward. D. Remove dial pointer by prising up centre clip which fastens it to dial cord at rear of pointer carriage. E. Remove from each end of dial plate the large lock nut fastening dial plate to chassis.			
3.	Connect speaker leads and leads from tuning unit chassis to power supply chassis.			
4.	To control grid of 6N8 valve pin No. 2.	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Turn wave change switch to b/cast. band. Leave grid wire attached to valve socket. Peak 2nd IF. trans. pri. and sec. for max. output.
5.	To control grid of 6AN7 valve, pin No. 2.	455 Kc/s.	0.01 MF Mica capacitor in series with generator.	Leave grid wire attached to valve socket. Turn perm. tuner so that iron cores are out of windings on coil formers. Peak 1st IF. trans. pri. and sec. for max. output.
6.	Refit dial back plate, dial pointer, gear wheel and plate assy. to volume control shaft and gear wheel to tone control shaft. Make sure that the gear wheel teeth mesh correctly.			

B/CAST. AND S/WAVE. ALIGNMENT

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	DIAL POINTER SETTING. Turn tuning spindle so that perm tuner iron cores are out of the windings on the coil formers and the unit is hard against the stop. Set the centre of the dial pointer on the centre of the end of travel spot on the dial near 1700 Kc/s.			
2.	To antenna lead	1000 Kc/s.	200 MMF mica capacitor in series with generator.	Turn tuning control and perm. tuner until centre of dial pointer aligns with centre of spot on dial reading at 1000 Kc/s. Peak b/cast. oscl. coil trimmer cond., then peak b/cast. antenna coil trim. cond. for max. output. Re-peak oscl. coil trim. condenser.
3.				Tuning range after alignment 535-1610 Kc/s.
4.				Check logging at each end of the dial.
5.	Turn wave change switch to 49 metre band (this band must be aligned before the 31, 25 and 19 metre bands).			
6.	To antenna lead	6.08 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 49 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 6.08 Mc/s. mark on the dial. Adjust 49 metre band oscl. coil ind. trimmer (iron core) for logging, then peak 49 metre antenna coil ind. trimmer (iron core) for max. output.
7.	To antenna lead	9.6 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 31 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 9.6 Mc/s. mark on dial. Adjust 31 metre oscl. coil ind. trimmer (iron core) for logging, then peak 31 metre antenna coil ind. trim. (iron core) for max. output.
8.	To antenna lead	11.8 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 25 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with the 11.8 Mc/s. mark on the dial. Adjust 25 metre band oscl. coil ind. trim. (iron core) for logging, then peak 25 metre antenna coil ind. trim. (iron core) for max. output.

9.	To antenna lead	15.2 Mc/s.	400 ohm non-inductive resistor in series with generator.	Turn wave change switch to 19 metre band. Turn tuning spindle and perm. tuner until dial pointer aligns with 15.2 Mc/s. mark on the dial. Adjust 19 metre band oscl. coil ind. trim. (iron core) for max. output.
10.	To antenna lead	Multi-vibrator		Check logging on 49, 31, 25 and 19 metre bands at each 100 Kc/s. mark on the dial.

NOTE: The iron cores in the perm. tuner coils and the s/w. conds. on the perm. tuner are set to an exact dimension. No adjustment to the dimensions is to be made if misalignment and incorrect logging are to be avoided.

COIL COLOUR CODE

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

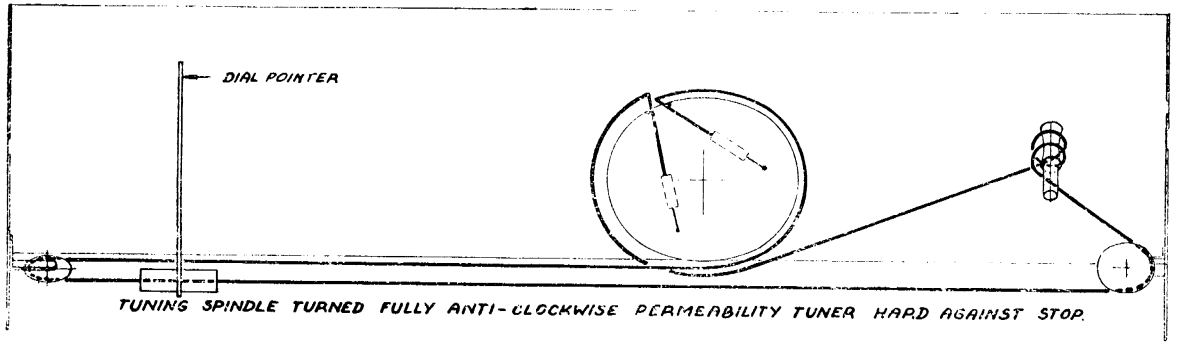
MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT: For 200-220 volt operation: The receiver or the power unit chassis do not have to be removed from the cabinet for the adjustment. SWITCH THE RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET.

Remove cabinet back board from the cabinet by unscrewing the screws fastening it to the cabinet. From the rear of the cabinet, the mains tap terminal strip may be seen on the side of the power unit chassis mounted to the base of the cabinet. Unsolder the mains lead wire from the AC. junction block which is attached to the mains terminal strip tap marked 221-250V. and re-solder it to the terminal strip tap marked 200-250V. Refit cabinet back board to cabinet.

CORDING OF DIAL DRIVE

Length of cord required is 4 ft. 6 ins., which includes about 8 ins. to spare for tying to tension springs.
Cord Part No. 34/754.
Tension Spring (2) Part No. 508/30 C.



PB 783

TRANSFORMER CONNECTIONS

B/CAST ANTENNA TRANS.
Start of winding – furthest from mounting end – Antenna, A.V.C.
Finish of winding – nearest to mounting end – Grid.

B/CAST OSCL COIL.
Start of winding – furthest from mounting end – Oscl. plate.
Finish of winding – nearest to mounting end – Oscl. grid.

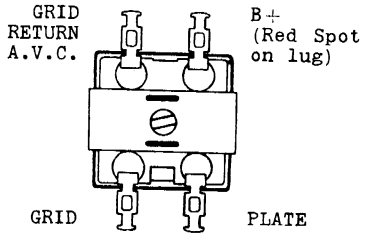
19, 25, 31 AND 49 METRE ANT. TRANS.
Lead from top lug (iron core end):– GRID.
Lead from bottom lug (mounting end):– CHASSIS – EARTH.

19, 25, 31 AND 49 METRE OSCL. COIL
Lead from top lug (iron core end):– GRID.
Lead from bottom lug (mounting end):– OSCL. PLATE COND.

---

49 Metre spreadband coil, YELLOW spot on iron core end of former.
31 Metre spreadband coil, RED spot on iron core end of former.
25 Metre spreadband coil, WHITE spot on iron core end of former.
19 Metre spreadband coil, BROWN spot on iron core end of former.

1st IF. TRANS.



2nd IF. TRANS.